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Nos. 14-1513 and 14-1520

IN THE

Supreme Court of the United States

HALO ELECTRONICS, INC., ET AL.,
Petitioners,

v.

PULSE ELECTRONICS, INC., ET AL.,
Respondents.

ON WRITS OF CERTIORARI TO THE
UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

BRIEF OF PROFESSOR ADAM MOSSOFF AS *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY

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QUESTION PRESENTED

1. Whether the Federal Circuit erred by applying a rigid, two-part test for enhancing patent infringement damages under 35 U.S.C. § 284.

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Davoll v. Brown,
7 F. Cas. 197 (C.C.D. Mass. 1845) 8

Other Sources

35 U.S.C. § 284 ..... *passim*

A Market for Ideas, The Economist,
Oct. 22, 2005, at 3 5

Adam Mossoff, *Patent Licensing and Secondary Markets in the Nineteenth Century*,
22 George Mason Law Review 959 (2015) .. 8, 9-10

Adam Mossoff, *Repetition of Junk Science and Epithets Does Not Make Them True*,
IPWatchdog (Nov. 19, 2015), *at*
http://www.ipwatchdog.com/2015/11/19/repetition-of-make-them-true/id=63302/ 4

Adam Mossoff, *The SHIELD Act: When Bad Economic Studies Make Bad Laws*, CPIP Blog (Mar. 15, 2013), *at*
http://cpip.gmu.edu/2013/03/15/the-shield-act-when-bad-economic-studies-make-bad-laws/ 4

Adam Mossoff, *The Rise and Fall of the First American Patent Thicket: The Sewing Machine War of the 1850s*,
53 Arizona Law Review 165 (2011) 10, 13, 27

Adam Mossoff, *Who Cares What Thomas Jefferson Thought About Patents? Reevaluating the Patent "Privilege" in Historical Context*, 92 Cornell Law Review 953 (2007) 7

Adam Mossoff, *Patents as Constitutional Private Property: The Historical Protection of Patents under the Takings Clause*, 87 Boston University Law Review 689 (2007). 8

Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* (Edwin Cannan ed., University of Chicago Press 1976) (1776) 28

Anne Kelley, *Practicing in the Patent Marketplace*, 78 University of Chicago Law Review 115 (2011) 5

Audrey Quinn, *The Diaper Wars*, Life of the Law (Feb. 10, 2015), *at* http://www.lifeofthelaw.org/2015/02/the-diaper-wars/. 27-28

B. Zorina Khan, *Trolls and Other Patent Inventions: Economic History and the Patent Controversies in the Twenty-First Century*, 21 George Mason Law Review 825 (2014) ..... *passim*

B. Zorina Khan, *Facts and Fables: A Long-Run Perspective on the Patent System*, Cato Unbound (Sept. 10, 2014), *at* http://www.cato-unbound.org/2014/09/10/b-zorina-khan/facts-fables-long-run-perspective-patent-system. 24

B. Zorina Khan, *The Democratization of Invention: Patents and Copyrights in American Economic Development, 1790-1920* (2005) 6, 7, 17, 25

Brian T. Yeh, Congressional Research Service, R42668, *An Overview of the "Patent Trolls" Debate* (Apr. 16, 2013) 19, 20

Christopher Beauchamp, *The First Patent Litigation Explosion*, 125 Yale L.J. ___ (2016) (forthcoming), *at* http://ssrn.com/abstract=2699964 ..... *passim*

Christopher Beauchamp, *Invented by Law: Alexander Graham Bell and the Patent That Changed America* (2015) 7

Colleen Chien & Edward Reines, *Why Technology Customers Are Being Sued En Masse for Patent Infringement and What Can Be Done*, 49 Wake Forest L. Rev. 235 (2014) 5

Demand Letters and Consumer Protection: Examining Deceptive Practices and Patent Assertion Entities: Hearing Before the Subcomm. on Consumer Prot., Prod. Safety, and Ins. and S. Comm. on Commerce, Sci., and Transp., 113th Cong. 34-62 (2013) (statement of Adam Mossoff, Professor of Law, George Mason School of Law) 9

Dongbiao Shen, *Misjoinder or Mishap? The Consequences of the AIA Joinder Provision*, 29 Berkeley Technology Law Journal 545 (2014) 25

Earl W. Hayter, *The Western Farmers and the Drivewell Patent Controversy*, 16 Agricultural History 16 (1942) 20

Federal Trade Commission, *FTC Settlement Bars Patent Assertion Entity From Using Deceptive Tactics*, Nov. 6, 2014, *at* https://www.ftc.gov/news-events/press-releases/2014/11/ftc-settlement-bars-patent-assertion-entity-using-deceptive 20

James Bessen & Michael J. Meurer, *A Third of the Economy is at Stake—and Patent Trolls are to Blame*, Washington Post, Nov. 18, 2015, *at* https://www.washingtonpost.com/news/in-theory/wp/2015/11/18/patent-trolls-are-costing-us-billions-they-must-be-stopped/ 23-24

James Bessen & Michael J. Meurer, *The Patent Litigation Explosion*, 45 Loyola University of Chicago Law Journal 401 (2014) 23

Joe Nocera, *The Patent Troll Smokescreen*, N.Y. Times, Oct. 23, 2015, *at* http://www.nytimes.com/2015/10/24/opinion/the-patent-troll-smokescreen.html 6

Kenneth Sokoloff & B. Zorina Khan, *Institutions and Technological Innovation During the Early Economic Growth: Evidence from the Great Inventors of the United States, 1790-1930*, NBER Working Paper No. 10966 (Dec. 2004), *at* http://www.nber.org/papers/w10966 12

Letter by Forty Economists and Law Professors to House and Senate Judiciary Committees (Mar. 10, 2015), *at* http://cpip.gmu.edu/wp-content/uploads/2015/03/Economists-Law-Profs-Letter-re-Patent-Reform.pdf 21

Michael Risch, *Patent Troll Myths*, 42 Seton Hall Law Review 457 (2012) 19

Naomi R. Lamoreaux & Kenneth L. Sokoloff, *Inventive Activity and the Market for Technology in the United States, 1840-1920*, NBER Working Paper No. 7107 (May 1999), *at* http://www.nber.org/papers/w7107 8

Naomi R. Lamoreaux, *et al.*, *Patent Alchemy: The Market for Technology in US History*, 87 Business History Review 3 (Spring 2013) 11

Richard Posner, *Patent Trolls*, The Becker-Posner Blog, July 21, 2013, *at* http://www.becker-posner-blog.com/2013/07/patent-trollsposner.html 6

Robert A. Brown & James P. Clements, *A Patent-Troll Bill with Bad College Grades*, Wall Street Journal, Apr. 14, 2015, *at* http://www.wsj.com/articles/a-patent-troll-bill-with-bad-college-grades-1429051694 21-22

Ron D. Katznelson, *A Century of Patent Litigation in Perspective* (Nov. 17, 2014), *at* http://papers.ssrn.com/abstract=2503140 28

Sannu K. Shrestha, *Note, Trolls or Market-Makers? An Empirical Analysis of Nonpracticing Entities*, 110 Columbia Law Review 114 (2010) 18-19

Scientific American, Aug. 28, 1869, at 143 14

Scientific American, Aug. 12, 1854, at 383 15

Steve Haber & Seth J. Werfel, *Why Do Inventors Sell to Patent Trolls? Experimental Evidence for the Asymmetry Hypothesis* (Nov. 3, 2015), *at* http://ssrn.com/abstract=2552734 20

Steven Lubar, *The Transformation of Antebellum Patent Law*, 32 Technology & Culture 932 (1991) 12

U.S. Government Accounting Office, *Intellectual Property: Assessing Factors That Affect Patent Infringement Litigation Could Help Improve Patent Quality* (Aug. 2013) 11, 25

U.S. Patent No. 3,633 10

U.S. Patent No. 4,750 10

U.S. Patent No. 6,439 13

U.S. Patent No. 45,466 18

U.S. Patent No. 129,843 17

U.S. Patent No. 208,137 18

University Inventions that Changed the World, **at**
http://www.ipadvocate.org/pdfs/Uni%20Inventions%20Changed%20the%20World.pdf 22

INTEREST OF *AMICI CURIAE*[1]

Amicus curiae is Adam Mossoff, Professor of Law at George Mason University School of Law. Professor Mossoff teaches and writes on patent law and policy and is thus concerned with the integrity of the legal system that secures innovation to its creators and to the companies that commercialize it in the marketplace. He has written extensively on the historical understanding of the patent system in the United States of America, and on the invention and commercialization practices of patent owners throughout the eighteenth and nineteenth centuries. Given that some parties and *amici* are making historical claims about whether patent licensing entities should receive the benefit of the enhanced damages provided for in § 284 of the Patent Act, Professor Mossoff respectfully submits this brief to clarify the historical record on patent licensing and litigation.

SUMMARY OF THE ARGUMENT

In the present case, the issue before the Court is the proper interpretation of 35 U.S.C. § 284. It is a question of statutory construction, but in recent years, some commentators have argued that enhanced damages should not be available for

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[1] Petitioner and Respondents in No. 14-1513 filed letters of blanket consent to *amici* on November 10 and November 19, 2015, respectively. Petitioner in No. 14-1520 filed a letter of blanket consent to amici on November 11, 2015. Respondents in No. 14-1520 consented via letter on December 15, 2015. *Amicus* and counsel represent that no party to this case nor their counsel authored this brief in whole or in part, and that no person other than *amicus* paid for or made a monetary contribution toward the preparation and submission of this brief.

inventors and companies that license their patented innovations, as opposed to manufacturing them. These arguments have appeared in this case as well. These assertions are wrong and should be rejected.

During the last decade, the patent policy debates have been dominated by the concept of "patent trolls." This pejorative term implies that there are individuals and companies who "hold up" innovation by abusing the patent system via litigation and licensing. Although this term has gripped the courts, regulatory agencies, and Congress, it is important to recognize that it lacks a settled definition. Going far beyond the few bad actors repeatedly identified in the policy debates, commentators and policy advocates have attacked as "trolls" anyone who licenses their patented innovation—individual inventors, universities, startups, and even manufacturing companies that license in addition to manufacturing their patented innovation. In sum, though compelling as a rhetorical device, this term demonizes and obfuscates, as opposed to advancing a rational, substantive analysis of important issues such as patent licensing, infringement, and enforcement.

One profoundly mistaken claim that accompanies the "patent troll" epithet is that the patent licensing business model, as well as the enforcement of patents by the individuals and companies who use this business model, is a new phenomenon in today's innovation economy. This historical claim, which is sometimes explicit but often times merely implicit, drives an equally mistaken assumption that this allegedly novel commercial behavior harms innovation. For instance, Petitioners in consolidated Case No. 14-1520 assert that a "patentee's business

model" in licensing its property or asserting it against infringers does not "incentivize innovation," and thus these patent owners should be denied enhanced damages under § 284. Pet'rs' Br. at 43.

In a case presenting a straightforward question of statutory interpretation, these mistaken historical and policy claims should not infect the Court's decision-making process. Historically, individuals and companies licensing and enforcing patent rights have long served an important role in ensuring that the patent system achieves its objective of promoting the progress of the useful arts. These "patent licensing entities" serve the vital function of making capital available to inventors and businesses for ongoing research and development, as well as achieving efficiencies in the marketplace via a division of labor between inventors and commercial intermediaries. The parties and other *amici* fully address the relevant legal and factual issues concerning the interpretation and application of § 284, and thus *Amicus* here offers two further insights for ensuring that the Court construes the Patent Act in accord with longstanding historical understandings and practices in promoting innovation.

First, the argument that patent licensing entities should not receive enhanced damages is based on a mistaken view that they are of only recent vintage and are causing harm to manufacturing companies producing innovation. To the contrary, historical research has confirmed that patent licensing has played a significant and important role in the patent system since the early nineteenth century. The patent licensing business model has long been a part

of the successful functioning of the patent system in driving America's innovation economy.

Second, the premise that patent litigation rates are at unprecedentedly high levels today is false. That premise should therefore not be the basis for a denial of awards of enhanced damages under § 284 to patent licensing entities. As shown in research by award-winning economist Zorina Khan, today's patent litigation rates are within historical norms and, in fact, are lower than patent litigation rates seen for decades in the Antebellum Era.

ARGUMENT

I. Patent Licensing Entities Are Not New, and They Serve an Important Role in the Development of Innovation

It is without doubt that the patent licensing business model and patent litigation have become a flashpoint of controversy today. The companies or individuals who engage in patent licensing and litigation today are widely referred to as "patent assertion entities" (PAE), "non-practicing entities" (NPE) or by the more fashionable and inflammatory term, "patent trolls."[2]

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[2] This term lacks any objective definition, and it should not be used by lawyers, commentators, or scholars who care about precision and accuracy in discussions of patent law and policy. *See, e.g.*, Adam Mossoff, *Repetition of Junk Science and Epithets Does Not Make Them True*, IPWatchdog (Nov. 19, 2015), *at* http://www.ipwatchdog.com/2015/11/19/repetition-of-make-them-true/id=63302/; Adam Mossoff, *The SHIELD Act: When Bad Economic Studies Make Bad Laws*, CPIP Blog (March 15, 2013), *at* http://cpip.gmu.edu/2013/03/15/the-shield-act-when-bad-economic-studies-make-bad-laws/.

For reasons addressed in this section, these companies and individuals should be identified by their actual business model: patent licensing. Unless one works at a law firm, litigation (including threats of litigation) is not a business model; rather, the business model is licensing, in the course of which it can be necessary to threaten to sue or sue recalcitrant licensees. Since the early nineteenth century, untold numbers of inventors and companies have licensed or sold their patents, rather than manufactured their inventions. This has achieved tremendous efficiencies through the division of labor and has been essential to America's flourishing innovation economy.

Unfortunately, patent licensing entities are more the subject of misunderstanding and myth than of fact—an equally unfortunate feature of most modern policy debates in the halls of Congress. One such myth is that the patent licensing business model is a new phenomenon and should therefore be viewed with suspicion given its allegedly unknown role in the innovation economy. Commentators repeatedly express such mistaken beliefs in law journal articles, which are supposed to be scrupulously fact-checked by editors. *See, e.g.*, Anne Kelley, *Practicing in the Patent Marketplace*, 78 Univ. Chicago L. Rev. 115, 117 (2011) ("The patent marketplace is a relatively new secondary market, which has grown quickly."); Colleen Chien & Edward Reines, *Why Technology Customers Are Being Sued En Masse for Patent Infringement and What Can Be Done*, 49 Wake Forest L. Rev. 235, 236 (2014); *A Market for Ideas*, The Economist, Oct. 22, 2005, at 3, 3 ("A new breed of companies has appeared on the periphery of today's tech firms, acting as intellectual-property intermediaries and creating a market for ideas.").

Even a prominent judge such as the Honorable Richard A. Posner simply assumes that patent licensing is new when he proposes a manufacturing requirement for all patents as a solution to the allegedly new problem of "patent trolls." *See, e.g.*, Richard Posner, *Patent Trolls*, The Becker-Posner Blog, July 21, 2013, *at* http://www.becker-posner-blog.com/2013/07/patent-trollsposner.html. As these mistaken assumptions have captured the public's view of the patent system, commentators and certain companies have lobbied for changes to the patent laws to counteract this so-called new phenomenon. *See, e.g.*, Joe Nocera, *The Patent Troll Smokescreen*, N.Y. Times, Oct. 23, 2015, *at* http://www.nytimes.com/2015/10/24/opinion/the-patent-troll-smokescreen.html.

This conventional wisdom, like much conventional wisdom, is profoundly mistaken. As award-winning economist Zorina Khan has explained in thoroughgoing research into primary historical sources, licensing has long been an essential feature of the uniquely American patent system, which has long secured property rights in innovation to both inventors and the marketplace actors who commercialized this innovation. *See, e.g.*, B. Zorina Khan, *Trolls and Other Patent Inventions: Economic History and the Patent Controversies in the Twenty-First Century*, 21 Geo Mason L. Rev. 825 (2014); B. Zorina Khan, *The Democratization of Invention: Patents and Copyrights in American Economic Development, 1790-1920*, at 10 (2005) ("Extensive markets in patent rights [in the nineteenth century] allowed inventors to extract returns from their activities through licensing and assigning or selling their rights."). Professor Khan and other economists have recently expanded upon

and extended their historical research to more directly address today's hot-button policy debate concerning patent licensing and secondary markets. Legal historians, such as Christopher Beauchamp, have delved into difficult-to-access court records and other primary sources concerning nineteenth-century patented innovation to reveal the true extent of licensing activities and litigation in the nineteenth century. *See* Christopher Beauchamp, *The First Patent Litigation Explosion*, 125 Yale L.J. __ (2016) (forthcoming), *at* http://ssrn.com/abstract=2699964, at 4–5; Christopher Beauchamp, *Invented by Law: Alexander Graham Bell and the Patent That Changed America* (2015).

An accurate historical perspective is necessary to understand the current debate about patent licensing, litigation, and the role of enhanced damages with respect to patent licensing entities. Thus, *Amicus* will provide a brief overview of patent licensing and the marketplace for patented innovation in the nineteenth century.

A. The Patent Licensing Business Model in the Nineteenth Century

During the legislative debates that led up to the enactment of the Patent Act of 1790, the Senate considered a manufacturing requirement for patentees, but the House explicitly rejected this proposal as an infringement of a patentee's rights. *See* Khan, *The Democratization of Invention*, *supra*, at 41. With passage of the Patent Act of 1790, patents were defined in American law as property rights, as early Congresses and courts ensured that patents had all the attributes of property rights that are legally secured to their owners. *See* Adam Mossoff, *Who Cares What Thomas Jefferson Thought*

About Patents? Reevaluating the Patent "Privilege" in Historical Context, 92 Cornell L. Rev. 953, 992–97 (2007); Adam Mossoff, *Patents as Constitutional Private Property: The Historical Protection of Patents under the Takings Clause*, 87 B.U. L. Rev. 689, 702–03 (2007). Reflecting the dominant legal approach to securing American patent rights, Circuit Justice Levi Woodbury explained in an 1845 patent case: "[W]e protect intellectual property, the labors of the mind, productions and interests as much a man's own, and as much the fruit of his honest industry, as the wheat he cultivates, or the flocks he rears." *Davoll v. Brown*, 7 F. Cas. 197, 199 (C.C.D. Mass. 1845).

As owners of property rights, patent owners were secured in their rights of acquisition, use, and disposal, which facilitated the licensing and sale of these property rights. This created the world's first patent licensing industry, beginning in early nineteenth-century America. Naomi R. Lamoreaux & Kenneth L. Sokoloff, *Inventive Activity and the Market for Technology in the United States, 1840-1920*, NBER Working Paper No. 7107, at 10–13 (May 1999), *at* http://www.nber.org/papers/w7107. In brief, the early American patent system was as much a part of American exceptionalism as every other aspect of American politics and law in the Federalist Period and in the Antebellum Era.

With that genesis, it should come as no surprise—yet it is frequently forgotten—that the patent licensing business model has deep historical roots in the American innovation economy. *See* Adam Mossoff, *Patent Licensing and Secondary Markets in the Nineteenth Century*, 22 Geo. Mason L. Rev. 959, 961–66 (2015). A complete survey of all

individuals and firms who used the patent licensing business model to commercialize patented innovation is beyond the scope of this *amicus* brief. Recent scholarship has brought renewed attention to the important role patent licensing played in the nineteenth century. *See, e.g.*, *id.*; Khan, *Trolls and Other Patent Inventions*, *supra*, at 830–34; Lamoreaux & Sokoloff, *Inventive Activity*, *supra*, at 3–5.

A few illustrative examples demonstrate both the importance of patent licensing in the nineteenth century and the extent to which the current patent policy debates have ignored the potential lessons from patent licensing in the nineteenth century. Three prominent examples are Charles Goodyear, Elias Howe, Jr., and Thomas Edison. *See Demand Letters and Consumer Protection: Examining Deceptive Practices and Patent Assertion Entities: Hearing Before the Subcomm. on Consumer Prot., Prod. Safety, and Ins. and S. Comm. on Commerce, Sci., and Transp.*, 113th Cong. 34-62 (2013) (statement of Adam Mossoff, Professor of Law, George Mason School of Law). The former two inventors are significant because they prove that, long before Edison began his massive inventive labors in the late nineteenth century, prominent inventors and patent owners utilized the patent licensing business model in the early nineteenth century.

The name Goodyear is widely known, particularly to NASCAR fans, but what is not known is that he did not create the Goodyear Tire & Rubber Company. The company was formed in 1898, almost four decades after Goodyear's death in 1860. *See* Mossoff, *Patent Licensing and Secondary Markets*,

supra, at 963. Goodyear did invent vulcanized rubber in 1839, and he received a patent for it in 1844. *See* U.S. Patent No. 3,633, issued June 15, 1844. During his lifetime, Goodyear embraced the patent licensing business model, and he and his licensees also engaged in extensive litigation against infringers of his innovative technology, filing hundreds of lawsuits. *See* Beauchamp, *The First Patent Litigation Explosion*, *supra*, at 16.

Perhaps a lesser known figure, Elias Howe played a pivotal role in the patent licensing marketplace in the nineteenth century. He invented the lockstitch in 1843, receiving a patent three years later. *See* U.S. Patent No. 4,750, issued Sept. 10, 1846. Similar to many inventors today, Howe entered into royalty agreements after suing commercial firms and individuals upon discovering that they were infringing his patent rights. In fact, Howe employed patent litigation practices that are erroneously called novel today. For instance, Howe was destitute when his licensing demands were refused in the early 1850s, and so he found a businessperson to invest in his patent infringement lawsuits and received funding from selling a one-half interest in his patent to George W. Bliss. Ultimately, after being a principal legal pugilist in the 1850s patent war known at the time as the "Sewing Machine War," Howe joined the Sewing Machine Combination of 1856, the first patent pool in American history, through which he recouped millions of dollars in licensing fees from companies and individuals who used his patented technology. *See* Adam Mossoff, *The Rise and Fall of the First American Patent Thicket: The Sewing Machine War of the 1850s*, 53 Ariz. L. Rev. 165, 184–85 (2011).

Finally, everyone knows of Thomas Edison, the quintessential American inventor, the Wizard of Menlo Park. He created a panoply of inventions, from the first practical incandescent light bulb to carbon microphones to movie cameras to a system for electric power distribution. Less well known about Edison is how he used patent sales or licenses to help him finance his inventive endeavors. Early in his career, for instance, he sold at least twenty of his early patented inventions to third-parties in order to fund his full-time research and development efforts. *See* Naomi R. Lamoreaux, *et al.*, *Patent Alchemy: The Market for Technology in US History*, 87 Business History Review 3, 6 (Spring 2013). Edison continued to sell or license his patent rights, including his patents to the innovative incandescent light bulbs, which he conveyed to the General Electric Company. Through those transactions, Edison benefitted from an advanced commercial system that permitted and encouraged an economic market in intellectual property rights, enabling him to continue his efforts as one of the world's greatest inventors. Because Edison was able to focus on his inventive efforts, the U.S. economy and society as a whole benefitted.

In short, "[h]istory is filled with examples of successful inventors who did not develop products based on the technologies they patented." U.S. Government Accounting Office, *Intellectual Property: Assessing Factors That Affect Patent Infringement Litigation Could Help Improve Patent Quality* 1 (Aug. 2013) ("GAO Report"), *at* http://www.gao.gov/assets/660/657103.pdf. Some nineteenth-century inventors did try to profit directly from their patents via manufacturing, but "[t]his became increasingly difficult with the rise of larger business firms and the increased capital costs

of going into business." Steven Lubar, *The Transformation of Antebellum Patent Law*, 32 Technology & Culture 932, 948 (1991). Thus, "[d]istributing some of the rights once held by inventors to purchasers of patents made the exercise of those rights more accessible to businesses and thus allowed them more control over their property." *Id.* Ultimately, as economic historians have found, two-thirds of the 160 "great inventors" of the Industrial Revolution used licensing to profit from their patented innovation. *See* Kenneth Sokoloff & B. Zorina Khan, *Institutions and Technological Innovation During the Early Economic Growth: Evidence from the Great Inventors of the United States, 1790-1930*, NBER Working Paper No. 10966, at 32, 36 (Dec. 2004), *at* http://www.nber.org/papers/w10966.

B. Secondary Markets in the Nineteenth Century

Although Edison, Goodyear, Howe, and others sold or licensed their patents, commenters assert that until recently inventors largely did not profit by the sale or licensing of their patents to market actors. This type of business activity in which a commercial asset like a patent is bought or sold is identified by economists as a "secondary market," and the oft-repeated claim today by many law professors and others is that large-scale selling and licensing of patents in a secondary market is a recent phenomenon. This is as profoundly mistaken as the related assertion that the patent licensing business model is novel. In fact, secondary markets for patents were extraordinarily important for facilitating the commercialization of inventions in the marketplace of the nineteenth century.

In the Sewing Machine War in the 1850s, for instance, the various patents obtained by different inventors on different components of the sewing machine were purchased or exchanged between a variety of individuals and firms. *See generally* Mossoff, *The Sewing Machine War*, *supra*. In fact, one of the most significant inventive contributions to the development of the sewing machine was made by John Bachelder (U.S. Patent No. 6,439, issued May 8, 1849), but Bachelder neither manufactured sewing machines nor licensed his patent. He sold his patent to Isaac Singer, who ultimately assigned it to the pool of patents owned and licensed by the Sewing Machine Combination, the patent pool formed in 1856 by Singer and other patent owners to resolve the hard-fought Sewing Machine War.

Even before the Sewing Machine War in the early 1850s, there was a vibrant secondary market in patents, and just like today, these secondary owners enforced their patents against infringers of their property rights. For instance, Allen B. Wilson invented a double-pointed shuttle for sewing machines in 1848. The following year, though, A.P. Kline and Edward Lee, the secondary owners of another sewing machine patent, threatened Wilson with a lawsuit for infringing their patent. Lacking the funds to defend himself, Wilson sold his patent rights to Kline and Lee to settle the dispute.

The outright sale of patents or the more limited licensing of patent rights occurred throughout many industries in nineteenth-century America. This is confirmed by the many, many classified ads in issues of *Scientific American* at that time, offering for sale or seeking to purchase patents or patent rights. In an 1869 issue of *Scientific American*, for example,

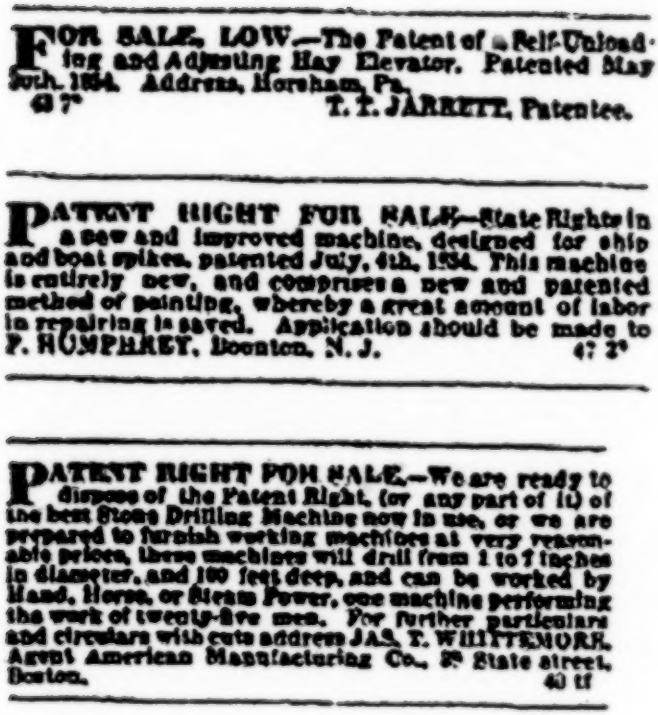
among advertisements touting the value to purchasers of "Woodbury's Patent Planing and Matching and Moulding Machines" and advertisements seeking "agents" "[t]o sell H.V Van Etten's Patent Device for Catching and Holding Domestic Animals," one finds advertisements offering the sale of patents and patent rights:

A PATENT ON A FARM GATE TO SELL or Exchange for a No. 1 8-horse power Portable Steam Engine. Address C. H. EMMERT, West Dresden, Yates Co., N. Y.

BENT, GOODNOW & CO., Boston, Mass., Agents for the sale of Patents. FOR SALE—A variety of very valuable "Rights." Send stamp for THE PATENT STAR, Containing descriptions of each.

PATENT RIGHTS SOLD ON COMMISSION, and Valuable Inventions introduced by the most experienced Patent Salesmen in the Union. Can refer to over one hundred inventors for whom we have acted. M. M. ROBERTS & CO., Consulting Engineers, 13 Wall st., New York.

Scientific American, Aug. 28, 1869, at 143. To take but one more small set of examples: an 1854 issue of *Scientific American* contained advertisements for the sale of the rights in various patents covering hay elevator technology, boat spike machining technology, and a stone drilling machine:



FOR SALE, LOW.—The Patent of a Self-Unloading and Adjusting Hay Elevator. Patented May 30th, 1854. Address, Horsham, Pa.
43 7* T. T. JARRETT, Patentee.

PATENT RIGHT FOR SALE.—State Rights in a new and improved machine, designed for ship and boat spikes, patented July, 4th, 1854. This machine is entirely new, and comprises a new and patented method of pointing, whereby a great amount of labor in repairing is saved. Application should be made to P. HUMPHREY, Boonton, N. J. 47 3*

PATENT RIGHT FOR SALE.—We are ready to dispose of the Patent Right, (or any part of it) of the best Stone Drilling Machine now in use, or we are prepared to furnish working machines at very reasonable prices. These machines will drill from 1 to 7 inches in diameter, and 100 feet deep, and can be worked by Hand, Horse, or Steam Power, one machine performing the work of twenty-five men. For further particulars and circulars with cuts address JAS. T. WILLITEMORE, Agent American Manufacturing Co., 3? State street, Boston. 40 tf

Scientific American, at 383 (Aug. 12, 1854)

These advertisement sections in nineteenth-century issues of *Scientific American* and other periodicals reflect incontrovertible evidence of both secondary markets in patents and the patent licensing business model.

Indeed, there were robust secondary markets in patents throughout the nineteenth century. *See* Lamoreaux, *et al.*, *supra*, at 6–7 Patent attorneys had a fundamental, significant role as market intermediaries in the late nineteenth century, effectively serving as predecessors of today's patent licensing firms. This included one businessperson who "invested in patents for hat-frame formers, rails for high-speed railroads, electric railroad systems, and pliers." *Id.* at 20. Another's "investments spanned the technological gamut from envelopes to drills to arc lamps to sewing machines to railroad

signaling systems." *Id.* The wide-ranging innovation invested in by these individuals "suggests they were not primarily manufacturers seeking to improve the efficiency of their production processes or expand their product lines." *Id.*

Many of these nineteenth-century businesspersons were more similar to what we know today as angel investors or venture capitalists, but this is more likely the result of legal, market, and technological factors that are exogenous to the patent system. For instance, the twentieth century witnessed incredible innovation in the development of advanced forms of corporate structure, as well as equally innovative development of complex legal and financial mechanisms, that allowed for commercialization of patented innovation in ways that would have been outright impossible (or grossly inefficient) in the nineteenth century. Moreover, the technological advances wrought by the digital revolution—computers, the Internet, email, smartphones, wireless telecommunications, and many others—have reduced substantially the information costs and transaction costs in the commercialization of patented innovation.

Such factors are significant because they directly affect the commercialization of patented innovation; thus they cannot be ignored in assessing historical practices in the innovation industries. The creation of the Sewing Machine Combination of 1856, the first patent pool, as well as the Singer Sewing Machine Company's radical commercial innovation in mass marketing and in developing the first rent-to-own and trade-in programs, is significant evidence of the dynamic and mutually reinforcing relationship between technological, legal, and commercial

innovation. In brief, innovation breeds innovation, both commercial and technological, and the patent system is not the only variable at work in facilitating this process in promoting the progress of the useful arts, economic growth, and ultimately a flourishing society.

Within the constraints of primitive nineteenth-century corporate law and financial mechanisms, one finds an abundance of "patent agents," commercial investors, patent licensing practices, and secondary markets in patents. This is significant evidence that today's secondary markets and patent licensing business models have clear historical antecedents. Notwithstanding any legal or corporate differences, it is a mistake to think that secondary markets in patents and patent licensing are new phenomena today. Such assertions, reflected in today's conventional wisdom, are myth, not reality.

Even more important, the historical evidence confirms that the licensing market for patents provided a substantial benefit to many great inventors, especially to those whose financial means would not have allowed them to directly exploit their inventions through manufacturing or other business activity. *See* Khan, *The Democratization of Invention*, *supra*, at 219. For instance, Elijah McCoy (1844–1929), an African-American inventor, received his first patent for an automatic lubricating device in 1872. *See* U.S. Patent No. 129,843, issued July 23, 1872. McCoy lacked sufficient financial means to manufacture his improvements in engine lubricators. Instead, he sold his rights to his many patents in order to see a return on his investment of time and money. Similarly, John Francis Appleby (1840–1917) invented improved agricultural binding

mechanisms and obtained several patents in return. *See, e.g.*, U.S. Patent No. 45,466, issued Dec. 20, 1864; U.S. Patent No. 208,137, issued Sept. 17, 1878. He licensed and assigned his patents to companies that had the means for manufacturing the machines.

These few examples are by no means the only instances when nineteenth-century inventors turned to investors and businesspersons as a source of capital and commercialization. The patent licensing business model and secondary market were widespread phenomena throughout all aspects of the innovation economy in the nineteenth century. These were the crucial economic mechanisms by which inventors were able to use and dispose of their property rights, facilitating the division of labor and the availability of capital for inventors. This combination of technological and commercial innovation created the economic efficiencies that drove the innovation economy in the United States in the nineteenth century.

C. The Economic Function of Intermediaries in Patent Licensing and Secondary Markets

As in the nineteenth century, the firms that purchase or license patents play an important and complex role in the innovation economy today.

First, patent licensing firms provide the necessary capital or financial liquidity for companies and individuals to engage in productive labor in ongoing research and development. Alternatively, some patent licensing firms may make investments in intellectual property rights for the purpose of seeking a return on their investment by recovering damages for infringement of the acquired intellectual property rights. *See* Sannu K. Shrestha, *Note, Trolls*

or Market-Makers? An Empirical Analysis of Nonpracticing Entities, 110 Colum. L. Rev. 114, 119–31 (2010) (providing an overview of relevant literature and competing arguments). As noted earlier in reviewing Howe's use of third-party financing for his patent litigation efforts, this commercial practice has roots reaching back to the Antebellum Era. *See supra*, at 10.

Second, and more important, patent licensing firms provide commercial and financial expertise via division of labor and market specialization, creating efficiencies in converting an invention in the lab into real-world innovation that is sold in the marketplace. By enabling inventors to focus on inventing, rather than on financing or commercialization issues, patent licensing firms facilitate the most efficient use of human capital. Everyone benefits when inventors can spend more time and effort on creating new technological innovation. *See* Brian T. Yeh, Congressional Research Service, R42668, *An Overview of the "Patent Trolls" Debate* 8 (Apr. 16, 2013) ("The more licensing fees PAEs obtain, the more these inventors earn from their patents, and the greater their incentives to invent."); Khan, *Trolls and Other Patent Inventions*, *supra*, at 832 ("Specialized intermediaries are especially valuable in new or emerging markets and in instances where asymmetries of information are significant.").

Despite the inflammatory rhetoric about patent licensing today, history and economic theory confirm the important function of market intermediaries like patent licensing companies in the innovation economy. *See, e.g.*, Michael Risch, *Patent Troll Myths*, 42 Seton Hall L. Rev. 457, 458 (2012) (explaining that "the patents enforced by so-called

trolls—and the companies that obtained them—look a lot like other litigated patents and their owners"); Shrestha, *supra*, at 150 (noting that "NPEs can serve a valuable role in enhancing innovation by identifying and acquiring high value patents and thereby funding and encouraging some of the most successful inventors"). Empirical studies are also confirming this legitimate market function and its attendant positive social benefits. *See, e.g.*, Steve Haber & Seth H. Werfel, *Why Do Inventors Sell to Patent Trolls? Experimental Evidence for the Asymmetry Hypothesis* 3 (Nov. 3, 2015), http://ssrn.com/abstract=2552734 ("PAEs may serve an intermediary role in the market for intellectual property between individual inventors and large manufacturers."). Indeed, as the Congressional Research Service report on "patent trolls" recognized: "No one doubts that an efficient patent system needs intermediaries who reduce transaction costs between those who invent things and those who develop and commercialize them." Yeh, *supra*, at 6.

No doubt some bad actors exist today in the world of patent enforcement, just as they existed in the nineteenth century. In the nineteenth century, these bad actors were known as "patent sharks." *See* Earl W. Hayter, *The Western Farmers and the Drivewell Patent Controversy*, 16 Agricultural History 16, 22 (1942). There are also some bad actors today, such as MPHJ. *See* Federal Trade Commission, *FTC Settlement Bars Patent Assertion Entity From Using Deceptive Tactics*, Nov. 6, 2014, *at* https://www.ftc.gov/news-events/press-releases/2014/11/ftc-settlement-bars-patent-assertion-entity-using-deceptive. Beyond repeated citations to MPHJ and a handful of others, though, there is no evidence of a *systemic problem* requiring

a *systemic change* to the patent system in terms of treating patent owners differently based only on their business models. *See* Letter by Forty Economists and Law Professors to House and Senate Judiciary Committees (Mar. 10, 2015), *at* http://cpip.gmu.edu/wp-content/uploads/2015/03/Economists-Law-Profs-Letter-re-Patent-Reform.pdf (expressing "deep concerns with the many flawed, unreliable, or incomplete studies about the American patent system" that have been injected into the patent policy debates and identifying properly done studies of patented innovation).

In fact, there is substantial evidence that patent licensing and secondary markets serve a key function in an innovation economy rooted in property rights in technological innovation. For example, universities are probably the most prominent example of patent licensing entities. Many academic institutions expend extraordinary amounts on research and development, the fruits of which are later patented, but these institutions do not manufacture products, nor should they. Academic institutions should license their property rights to those firms with the knowledge and capital to commercialize this technology in the marketplace, while focusing their expertise on supporting the researchers who produce new inventions. But the anti-"patent troll" rhetoric has reached such levels that proposed patent reforms threaten to weaken the patent system such that university-based research is made much riskier, as the presidents of Boston University and Clemson University recently explained. *See* Robert A. Brown & James P. Clements, *A Patent-Troll Bill with Bad College Grades*, Wall Street Journal, Apr. 14, 2015, *at*

http://www.wsj.com/articles/a-patent-troll-bill-with-bad-college-grades-1429051694 ("[T]he Innovation Act would make universities even more reluctant to assume the risk of defending their patents.").

As with the examples above, academic institutions have a long history of focusing on innovation and recovering their investments by acting through patent licensing firms. For example, Stillman W. Robinson (1838–1910) was the first mechanical engineering professor for the University of Illinois in 1870, and later became Engineering College Dean in 1878. Robinson's patents were later licensed to companies that could manufacture his inventions. Since then, key ground-breaking technologies have been developed at academic institutions and commercialized through licensing arrangements, which were sometimes also the result of settlements of patent litigation. Such examples include: recombinant DNA technology; streptomycin, the first antibiotic effective against tuberculosis; CAT scan technology; magnetic resonance imagining (MRI); and fluoride toothpaste (first marketed as Crest by Procter and Gamble). *See, e.g., University Inventions that Changed the World, at* http://www.ipadvocate.org/pdfs/Uni%20Inventions%20Changed%20the%20World.pdf.

Recognizing the economically vital and complex role of patent licensing entities is important, and it relates to the right of patent-owners to receive enhanced damages under § 284 in two ways. First, the evidence confirms that patent licensing firms continue to serve a vital, complex role in both the patent system and in the innovation economy. Without a proper economic study using data acquired according to standard scientific norms and

then analyzed according to legitimate methodologies of empirical research, it is impossible to conclude if patent licensing firms provide a net benefit or detriment to innovation. As the classic cliché in empirical research puts it: "The plural of 'anecdote' is not 'data.'" Moreover, without proper data collected and analysis performed concerning a particular patent licensing firm, it is equally difficult to draw any conclusions that such a firm either advances or hinders the creation and commercialization of patented innovation. A mere assertion of harm to innovation, especially in the adversarial context of litigation, is not actual evidence that such harm exists.

Second, patent licensing firms exist in a wide variety of forms, and creating any presumption or rule against this business model could easily undermine the innovation-promoting function of these market intermediaries. With an understanding of the history of patent licensing and enforcement, courts should reject broad assertions that patent licensing firms inhibit innovation.

II. The Patent Litigation Rate Today is Within Historical Norms and Thus Does Not Require Special Rules for Awarding Enhanced Damages

Another assertion frequently made in support of legislative and judicial patent "reform" is that the United States is experience an alleged "explosion" in patent litigation today. *See, e.g.*, James Bessen & Michael J. Meurer, *The Patent Litigation Explosion*, 45 Loyola U. Chi. L.J. 401, 402 (2014). In a recent essay in the *Washington Post* on the topic of "patent trolls," for instance, two professors claimed that "[o]ver six times as many patent lawsuits are filed today as in 1980." James Bessen & Michael J. Meurer, *A Third of the Economy is at Stake—and*

Patent Trolls are to Blame, Washington Post, Nov. 18, 2015, at https://www.washingtonpost.com/news/in-theory/wp/2015/11/18/patent-trolls-are-costing-us-billions-they-must-be-stopped/. But such claims are inaccurate or misleading, and thus they should not inform how courts apply § 284 to the myriad patent owners with many different and complex business models.

As Zorina Khan has shown, the average litigation rate has remained relatively steady for the past 150 years, because one must assess the number of lawsuits *as a percentage of the number of patents in force*. *See* Khan, *Trolls and Other Patent Inventions*, *supra*, at 861. Otherwise, a claim such as a "six times" increase in patent litigation does not control for population growth, economic growth, and the untold number of other factors that account for increases in the total numbers of lawsuits over the course of several decades. In fact, following this basic scholarly requirement of statistical analysis in assessing patent lawsuits relative to the number of existing patents results in a conclusion that is only surprising given the overheated rhetoric and misleading statistical claims about patent litigation today: Patent litigation from 1990-2010 averaged around 1.5%, and it has increased in recent years to only around 2%. *See* B. Zorina Khan, *Facts and Fables: A Long-Run Perspective on the Patent System*, Cato Unbound (Sept. 10, 2014), *at* http://www.cato-unbound.org/2014/09/10/b-zorina-khan/facts-fables-long-run-perspective-patent-system.

Moreover, studies have shown that the uptick in the number of patent lawsuits after 2011 correlated with *Congress's changes to legal rules for patent*

litigation in the America Invents Act of 2011. *See, e.g.*, GAO Report, *supra*, at 15; Beauchamp, *The First Patent Litigation Explosion*, *supra*, at 8; Dongbiao Shen, *Misjoinder or Mishap? The Consequences of the AIA Joinder Provision*, 29 Berkeley Tech. L. J. 545, 546 (2014) (observing that "[t]he absolute number of patent suits is up dramatically since the passage" of the America Invents Act).

Even the increase of patent litigation in recent years to around 2% is entirely within historical norms. The average patent litigation rate between 1800 and 1860 was 1.65%. *See* Khan, *The Democratization of Invention*, *supra*, at 71 (averaging total litigation rate assessed per decade). But for at least two decades in the Antebellum Era, patent litigation rates were *higher* than today's litigation rate. Between 1840 and 1849, for instance, patent litigation rates were 3.6%—*more than twice* the average patent litigation rate from 1990-2010 and still well above the approximately 2% rate seen in recent years. *Id.*

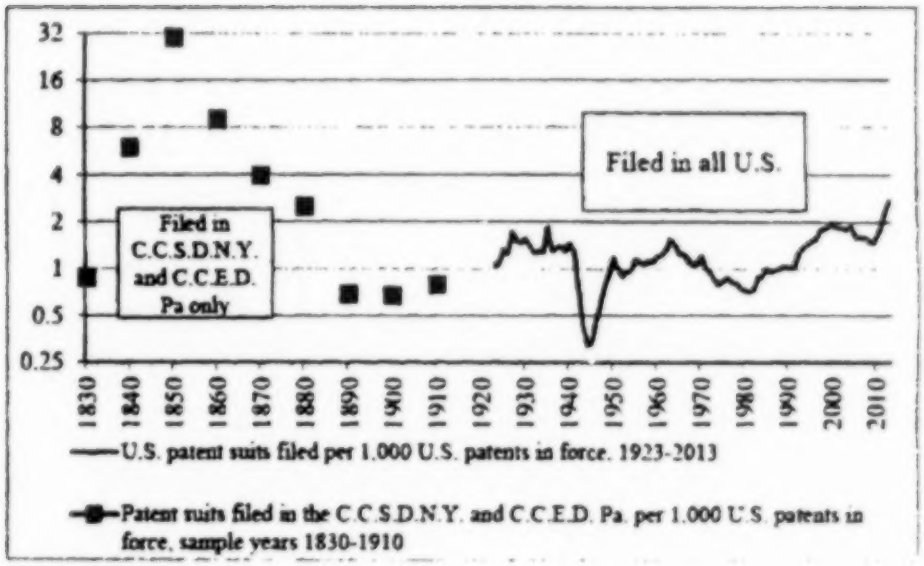
Similarly, legal historian Christopher Beauchamp has shed further light on the intense patent litigation in the nineteenth century. *See* Beauchamp, *The First Patent Litigation Explosion*, *supra*, at 8 ("[T]he nineteenth century offers a highly resonant earlier example of patent law under institutional and political stress."). Beauchamp reports that more than 300 patent infringement suits were filed in 1870, and 469 patent suits were filed in 1880, in only two district courts (Southern District of New York and the Eastern District of Pennsylvania). *Id.* at 28. To put this in proper comparative perspective, Beauchamp observes: "Federal courts in

New York State in 1880 recorded more than 650 infringement suits filed, more than any single state in 2011." *Id.* at 4–5.

Even when considering the number of patents litigated relative to the number of patents in force, nineteenth-century patent litigation far exceeds the current state of patent litigation. "The national rate of litigation per patent in 2013 was less than a third of the rates in 1860 in New York City and Philadelphia alone." *Id.* at 4. In 1850, those two cities experienced ten times the number of patent suits filed, per U.S. patent in force, compared to the entire United States in 2013. *Id.* In 2013, 4,917 patents were asserted in patent infringement suits nationwide, representing 2.2 litigated patents per 1,000 in force," lower than many years in the mid-nineteenth century *Id.* at 31.

Beauchamp's direct study of court filings in the nineteenth century is consistent with Khan's earlier study of patent decisions. In fact, if anything, Beauchamp confirms that Khan undercounted the total number of patent cases, which she recognized as a possibility given that she was counting only court decisions, not filed lawsuits. Nineteenth-century patents, simply put, were much more likely to be litigated than patents issued today.

The relative numbers of patent lawsuits filed in United States federal courts are readily apparent in the follow graph from Beauchamp's study:



Beauchamp, *The First Patent Litigation Explosion*, *supra*, at 31.

In addition to its record-setting patent litigation rates, the nineteenth and twentieth centuries also experienced many patent wars, proving that today's smart phone war is nothing new. Numerous studies have identified many historical patent wars over cutting-edge technical innovation, including the Woodward planing machine, Goodyear's vulcanized rubber, Cyrus McCormick's reaper, and the sewing machine, to name but a few. *See id.* at 23; Mossoff, *The Sewing Machine War*, *supra*, at 182–94. Patent wars continued into the later nineteenth century and into the twentieth century as well. *See* Khan, *Trolls and Other Patent Inventions*, *supra*, at 841 ("'Patent wars' were waged in expanding markets in shoe-making, reapers and other agricultural machinery, india rubber products, motion pictures, early aviation, radio, electricity and telecommunications."). There was even a patent war over disposable diaper technology in the 1980s. *See* Audrey Quinn, *The Diaper Wars*, Life of the Law (Feb. 10, 2015), *at*

http://www.lifeofthelaw.org/2015/02/the-diaper-wars/. As one commentator has observed, "patent litigation surges are consistent with major shifts in technological developments, which introduce novel terms and uncertainty in patent claims and require infringement analysis of novel and less understood products." Ron D. Katznelson, *A Century of Patent Litigation in Perspective* 14 (Nov. 17, 2014), *at* http://papers.ssrn.com/abstract=2503140.

In conclusion, patents have long secured property rights in technological innovation to inventors and to the intermediaries in the marketplace who commercialize this innovation. A robust market in patents has existed since the very beginning of America's innovation economy in the early nineteenth century, which included both the widespread use of a patent licensing business model and the equally widespread enforcement of patents against infringers. These early developments made sense, as they reflected Adam Smith's important insight that it is the division of labor that makes possible a successful and flourishing free market economy. *See* 1 Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* 7–15 (Edwin Cannan ed., Univ. Chi. Press 1976) (1776). This is exactly what America has achieved, and continues to do so today, by legally securing property rights in technological innovation. There is nothing in the history of patent licensing, of secondary markets in patents, and of patent litigation rates that suggests that today is any different in principle from what has come before. Thus, this Court should reject arguments that § 284 should be applied differently to patent licensing entities or as an alleged solution to a so-called "explosion" in patent litigation today.

CONCLUSION

For the foregoing reasons, *Amicus Curiae* Adam Mossoff respectfully submits that the Court should reject any rule, whether per se or merely as a matter of practice, that § 284 should be applied differently based on business models or other commercial features of a patent owner.

Respectfully submitted,

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December 16, 2015

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